Notice of Allowability	Application No.	Applicant(s)	
	10/600,008	GALAMBOS ET AL.	
	Examiner	Art Unit	
	Raquel Y. Gordon	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed 11/8/2004*.

2. ☒ The allowed claim(s) is/are *1-42*.

3. ☒ The drawings filed on *18 June 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Raquel Y. Gordon
Primary Examiner
Art Unit: 2853

Reasons for allowance

The following is a statement of reasons for allowance:

Upon consideration, the inclusion of the claimed surface-micromachined fluid-ejection apparatus, as claimed in the combination, is not found in the prior art. The primary reasons for allowance is the following claimed limitation is not taught by the prior art:

1. A surface-micromachined fluid-ejection apparatus, comprising: a) a substrate; b) an open-ended cylindrical fluid-ejection chamber formed on the substrate and further comprising a plurality of stacked and patterned layers of polycrystalline silicon, with the fluid-ejection chamber being adapted to receive a fluid, and with the fluid-ejection chamber further having a fluid-ejection orifice formed through a wall thereof at a location distal to an open end of the fluid-ejection chamber; and **c) a piston formed on the substrate and moveable in the plane of the substrate from a first position outside the fluid-ejection chamber to a second position inside the fluid ejection chamber to ejecte a jet or drop of the fluid through the orifice**;

23: A surface-micromachined fluid-ejection apparatus, comprising: a substrate; an open-ended fluid-ejection chamber formed on the substrate from a plurality of stacked and patterned layers of polycrystalline silicon, with the fluid-ejection chamber being adaped to receive a fluid, and with the fluid ejectin chamber further having a fluid-ejection orifice formed through a wall thereof; c) a fluid reservoir formed on the substrate from the plurality of stacked and patterned layers of polycrystalline silicon and connected to the fluid-ejection chamber to supply the fluid thereto; **d) a piston formed on the substrate and moveable in the plane of the substrate to eject a jet or drop**

of the fluid through the fluid-ejection orifice; and e) at least one microelectromechanical actuator formed on the substrate and operatively connected to provide reciprocating motion to the piston, with the microelectromechanical actuator being located outside the fluid reservoir and outside the fluid-ejection chamber; and

35. A surface-micromachined fluid-ejection apparatus, comprising: a substrate; an open-ended fluid-ejection chamber formed on the substrate, with the fluid-ejection chamber forming an electric-field-free region whereby a fluid disposed therein is not contacted by any electric field produced by the apparatus, and with the fluid-ejection chamber further having a micron-sized fluid-ejection orifice formed through a top wall thereof; c) a fluid reservoir formed on the substrate and connected to the fluid-ejection chamber to supply the fluid thereto; **d) a piston formed on the substrate and moveable in the plane of the substrate to eject a portion of the fluid through the fluid-ejection orifice; and e) at least one microelectromechanical actuator formed on the substrate outside the fluid reservoir and operatively connected to provide reciprocating motion to the piston**.

While Coleman et al. (US006318841B1) teach a similar invention, upon further consideration, it is deemed Coleman et al. does not teach a piston formed on a substrate, and moving outside of the fluid reservoir, as claimed.

Since the prior art does not teach or suggest the claimed invention, the independent claim is deemed allowed. Further, the claims dependent claims are allowed since they depend from dependant base claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Raquel Y. Gordon, whose telephone number is (571) 272-2145. The Examiner can normally be reached on M Tu Th and F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. A fax number is available upon request.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the Examiner or Supervisor.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raquel Y. Gordon
Primary Examiner
Art Unit 2853
December 23, 2004